NEIFELD IP LAW, P.C.
2001 Jefferson Davis Highway
Suite 1001
Arlington, VA 22202

Tel: 703-415-0012
Fax: 703-415-0013
Email: rneifeld@Neifeld.com
Web: www.Neifeld.com

TRANSMITTAL LETTER

ASSISTANT COMMISSIONER FOR PATENTS
POB 1450 Alexandria VA 22313-1450

RE: Attorney Docket No.: GRIF0010UUS
Application Serial No.: 10/607,970
Filed: 06/30/03
Title: INCENDIARY
Inventor: STEVENSON, R.

SIR:

Attached hereto for filing are the following papers:

(1) 37 CFR 1.55(a)(2) FILING OF CERTIFIED COPY OF A PRIORITY DOCUMENT (2 pages)
(2) CERTIFIED COPY OF AUSTRALIAN APPLICATION NO. PS 3289 FILED 01 July 2002 (9 pages)

Our check in the amount of $0.00 is attached covering the required fees.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2106. A duplicate copy of this sheet is enclosed.

31518
PATENT TRADEMARK OFFICE

2/23/2005
Date

Robert G. Crockett
Registration No. 42,448

Y:\Clients\GriffithHack\GRIF0010\GRIF0010UUS\Drafts\TransLtr_031015.wpd

NEW DOCKET NO: **GRIF0010UUS**

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: R. STEVENSON CONFIRMATION NO: 6946

US APPLICATION NO: 10/607,970

US FILING DATE: 06/30/2003

EXAMINER: BEHREND, D.

GROUP ART UNIT: 3641

TITLE: AN INCENDIARY

37 CFR 1.55(a)(2) FILING OF CERTIFIED COPY OF A PRIORITY DOCUMENT

ASSISTANT COMMISSIONER FOR PATENTS

POB 1450 Alexandria VA 22313-1450

Sir:

Remarks/Arguments begin on page 2 of this paper:

REMARKS

A certified copy of the following document to which priority is claimed is submitted herewith.

Priority Document:		Filed:
Application No. PS 3289	**Australia**	**01 July 2002**

Respectfully Submitted,

2/23/2005 DATE

Robert G. Crockett

Robert G. Crockett
Registration No. 42,448
Attorney of Record
Neifeld IP Law, PC
2001 Jefferson Davis Highway
Suite 1001
Arlington, VA 22202

Printed: February 23, 2005 (11:08am)
Y:\Clients\GriffithHack\GRIF0010\GRIF0010UUS\Drafts\CertifiedCopyOfProrityDocument_050223.wpd

Patent Office
Canberra

CERTIFIED COPY OF
PRIORITY DOCUMENT

I, LEANNE MYNOTT, MANAGER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PS 3289 for a patent by SKYWORX AVIATION as filed on 01 July 2002.

I further certify that the above application is now proceeding in the name of RAINDANCE SYSTEMS PTY LTD pursuant to the provisions of Section 113 of the Patents Act 1990.

WITNESS my hand this
Third day of July 2003

LEANNE MYNOTT
MANAGER EXAMINATION SUPPORT
AND SALES

APPLICANT: ~~SKYWORX AVIATION~~ Raindance Systems Pty Ltd

NUMBER:

FILING DATE:

AUSTRALIA

PATENTS ACT 1990

PROVISIONAL SPECIFICATION

FOR THE INVENTION ENTITLED:

"AN INCENDIARY "

The invention is described in the following statement:-

AN INCENDIARY

Field of the Invention

The present invention is an incendiary particularly, although not exclusively, for use in airborne fire control procedures such as back burning.

Background of the Invention

It is known to drop incendiaries from helicopters and light aircraft for the purposes of forestry management and back burning. One known incendiary is in the form of a small sphere (of approximately 32mm diameter) of plastics material filled with a quantity of potassium permanganate granules or powder. The spheres are injection moulded from extruded plastic. A small hole is formed in the sphere to allow filling with a volume of potassium permanganate. The hole is then sealed with wax (hot glue). These spheres are typically dropped from dispensers mounted in helicopters. The dispensers are provided with a hopper for holding a large number of spheres and feeding the spheres sequentially to a chute where they are injected with a small volume of glycol. The potassium permanganate and glycol react exothermically leading to their mutual combustion.

Ideally, the combustion occurs 20-30 seconds after injection of the glycol by which time the spheres have been ejected from the dispenser and have fallen to the ground.

While this form incendiary has performed adequately, it does suffer from several problems. Because of their shape the spherical incendiaries are inherently difficult to store and, if they spill from the hopper roll to various parts of the aircraft leading to potential safety hazards. Further, the spheres have a surprisingly low reliability in the order of 80%. This is in part due to difficulties in sequentially feeding the spheres to a chute and then successfully injecting them with glycol. It is not uncommon for the spheres to become jammed in the chute which then requires manual clearing. If the clearing is not performed expeditiously, there is a risk of combustion occurring within

the chute itself. Consequently it is a requirement that this type of incendiary be attended to on a full time basis. Another reason for their relatively low reliability is that the holes through which the spheres are initially loaded with potassium permanganate as sealed with wax. If the spheres are orientated so that the needle injecting the glycol is aligned with the wax seal, the needle blocks and has to be removed and cleaned before further use.

Object of the Invention

It is an object of the present invention to provide an alternate form of incendiary device which attempts to alleviate the problems inherent in the use of the known sphere type devices.

Summary of the Invention

According to the present invention there is provided an incendiary including at least:

a plurality of containers, each container containing a volume of a first substance, which, when mixed with a second substance, reacts exothermically; and,

frangible coupling means coupling said plurality of containers together.

Preferably said frangible coupling means couples said containers side-by-side.

Preferably said frangible coupling means couples said containers serially in a line.

Preferably said frangible coupling means is flexible.

Preferably each container is provided with a substantially flat surface.

Preferably each container includes a receptacle portion which opens onto said flat surface.

Preferably each container includes a seal which extends across said flat surface to close

said container.

In one embodiment said seal is in the form of a strip of material which seals adjacent containers and couples said adjacent containers together to thereby act as said frangible coupling means.

Brief Description of the Drawings

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a schematic representation from the side of an incendiary in accordance with the present invention;
Figure 2 is a bottom view of one of the containers in the incendiary shown in Figure 1;
Figure 3 is a section view through the container shown in Figure 2;
Figure 4 is a schematic representation of the incendiary depicting one form of frangible coupling between adjacent containers;
Figure 5 is a schematic representation of the incendiary depicting another form of frangible coupling between adjacent containers;
Figure 6 is a section view of a container of a further embodiment of the incendiary;
Figure 7 is a perspective view from the side of a container of another embodiment of the incendiary; and,
Figure 8 is a bottom view of the container depicted in Figure 4.

Detailed Description of Preferred Embodiments

Referring to the accompanying drawings, and in particular Figures 1-3, it can be seen that an embodiment of an incendiary 10 in accordance with the invention includes a plurality of containers 12 each containing a volume of a first substance 14, for example potassium permanganate, which, when mixed with a second substance, for example glycol (not shown) reacts exothermically. The exothermic reaction continues to the extent that the substances combust and generate a flame. Frangible coupling means in

the form of tabs 16 couples the containers 12 together. Most conveniently, the tabs 16 couple the containers 12 side-by-side, and more particularly serially in a line. In this way, the incendiary 10 is in the form of a flexible belt having a plurality of containers 12 which are mutually held together until separated by a dispensing/initiating machine (not shown).

In the embodiment depicted in Figures 1-3, the container 12 includes a receptacle portion 18 in the shape of a hemisphere having an opening 20 which opens into a flat surface 22. The opening 20, and flat surface 22 lie in a plane containing the diameter of the hemispherical receptacle portion 18, with the flat surface 22 extending outwardly from the perimeter of the opening 20.

During manufacture, the receptacle portion 18 is initially formed and then a volume of the material 14 deposited therein. Thereafter, the opening 20 is closed by a seal 24 which extends across the flat surface 22. The seal 24 can be in the form of a thin metal foil, a plastics sheet or a paper or cardboard strip which is glued or otherwise attached to the receptacle portion and/or flat surface 22.

When the incendiary 10 is in use, typically, a needle will be used to pierce through the seal 24 to inject a volume of glycol into the receptacle portion 18.

The tab 16 which constitutes the frangible coupling means can take many different forms. In Figure 1, the tab 16 is illustrated as a thin web of material extending between the flat surfaces 22 of adjacent containers 12. The web may be formed separately of the containers 12 and individually attached between adjacent containers 12. However this is likely to be an inefficient way of forming the coupling. Other forms of couplings are depicted in Figures 4 and 5.

In Figure 4, the coupling 16 is formed integrally with the flat surfaces 22 of adjacent containers 18, as a section of a reduced thickness for ease of separation and to provide flexibility between adjacent containers 12.

In Figure 5, the frangible coupling 16 is formed as an integral part of the seal 24 which spans a small separation gap 26 between adjacent containers 12. To further facilitate separation of adjacent containers 12 the frangible couplings 16 may be provided with a line of perforations or slits (not shown).

In yet a further alternative frangible coupling 12 can be formed as a strip of frangible material such as metal or plastic or paper which runs along and is attached to the surfaces 22 of adjacent containers 12 overlying the seal 24, to span separation gaps 26 between adjacent containers 12.

In the embodiments depicted in Figures 1-5, a flat surface 22 is shown which extends outwardly in a plane containing the diameter of the hemispherical receptacles 18. However, in a further embodiment depicted in Figure 6, the flat surfaces 22 can be limited to the upper surface of the receptacle portion 18 surrounding the opening 20. Accordingly the surface 22 would in effect be in the shape of an annulus. The seal 24 is glued or otherwise attached to the surface 22 as in the previous embodiments. Adjacent containers 12 of the type depicted in Figure 6 can be coupled together with a frangible coupling means in a similar manner as described above in relation to the incendiary 10 depicted in Figures 1-5.

Figures 7 and 8 depict a further variation in the configuration of the container 12. In this embodiment, the receptacle portion 18' is in the shape of a hemicylinder, ie a cylinder cut in a plane containing its axis, and having its opposite ends closed with semicircular walls 28. The portion 18' opens onto a flat surface 22 which extends outwardly from its perimeter. The container 12 is sealed with a seal 24, and coupled to adjacent containers 12 in a similar manner as described above in relation to the embodiments depicted in Figures 1-6.

Now that several embodiments of the present invention have been described in detail, it will be apparent to those skilled in the relevant arts that numerous modifications and variations may be made without departing from the invention in its broadest form. In particular, the shape of the receptacle 12 is essentially limitless. It can, for example,

take the form of a cube, triangular prism or indeed even a sphere. Also, fins or other aerodynamic aids may be provided, for example by moulding integrally with the containers 12, to improve the aerodynamics of the incendiary 10.

All such modifications and variations together with others that would be obvious to a person of ordinary skill in the art are deemed to be within the scope of the present invention the nature of which is to be determined from the above description.

Dated this 1st day of July 2002

Raindance Systems Pty Ltd
~~SKYWORX AVIATION~~
By Its Patent Attorneys
GRIFFITH HACK

AUSTRALIAN PATENT OFFICE SEC 113

Fellows Institute of Patent and Trade Mark Attorneys of Australia

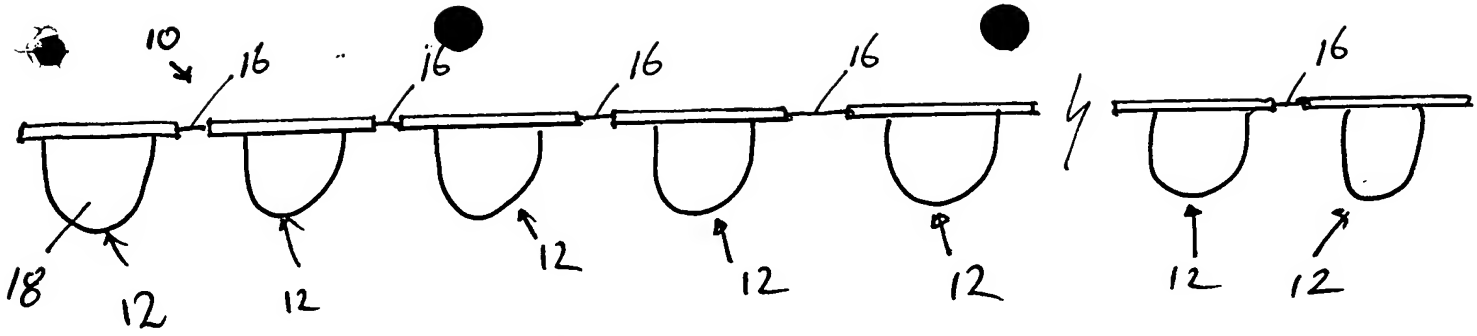

FIG 1

FIG 2

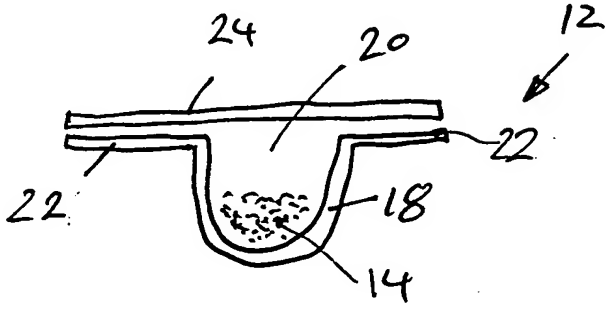

FIG 3

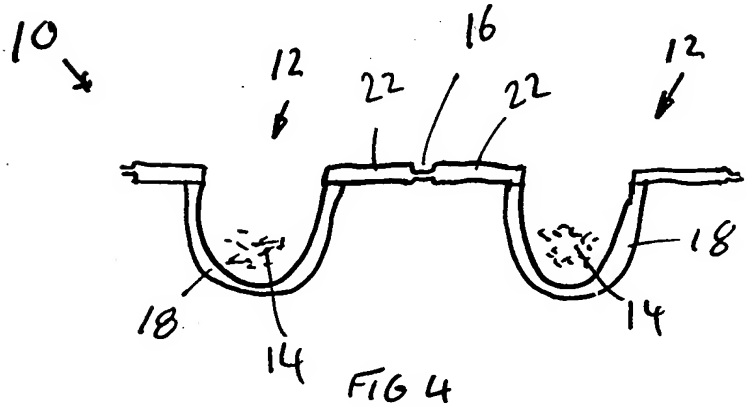

FIG 4

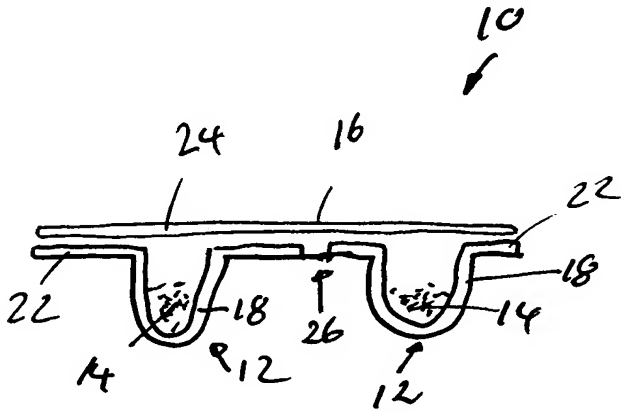

FIG 5

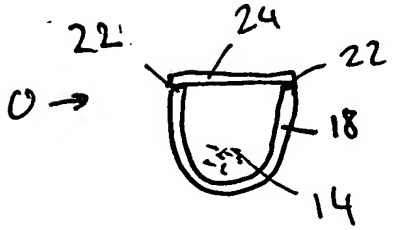

FIG 6

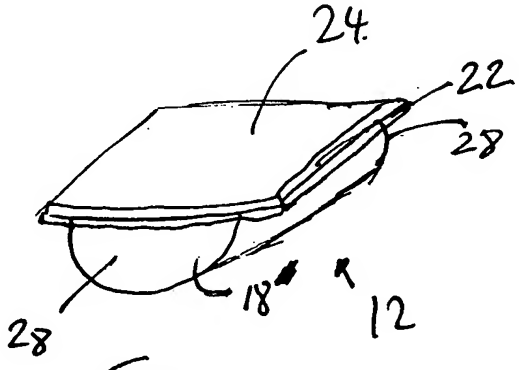

FIG 7

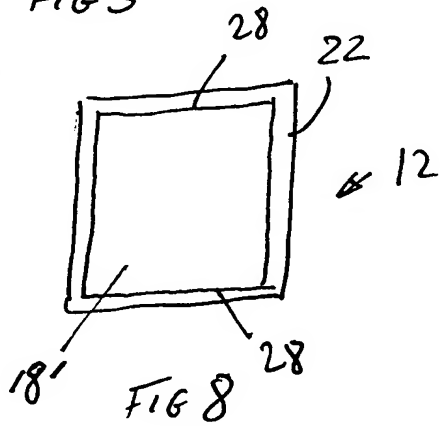

FIG 8